What's New

From the Army Physical Fitness Research Institute

APFRI Publication No. 4-07

April 2007

APFRI Recognizes April as National Foot Health Month

by Chris Kusmiesz, Exercise Physiologist

APFRI is committed to providing relevant information to its readers. This month the focus is on foot health but as promised, there is also a section on plant stanols, sterols and alcohol...

Choosing the proper running shoe can make the difference between enjoying running or hating it, running in comfort or in pain, and staying injury-free or incurring a multitude of injuries. Trying to select a single pair of running shoes from numerous brands and models can be intimidating. Ensuring that you buy the proper shoe for your foot type and running gait can be extremely confusing. The following article will help guide in your search to find the best running shoe for you.

Understand Pronation: Whenever you talk about running shoes, the term "pronation" is bound to come up. Pronation is a normal biomechanical process that occurs during running that allows the body to naturally absorb shock as each foot strikes the ground. A normal running gait begins with the foot contacting the ground on the back outside corner of the heel. The foot then rolls inward or "pronates" to absorb shock. The runners weight then transfers to the ball of the foot, the heel lifts up and finally the toes push off. Many runners pronate too much which is called "overpronation" or not enough which is called "underpronation". Wearing the appropriate running shoes can help to improve your running gait and eliminate or at least minimize lower extremity pain and injuries.

The Wet Foot Test: Determining your running gait is best achieved by having a qualified expert such as a sports medicine physician, physical therapist or an exercise physiologist analyze your running with a Video Gait Analysis (VGA) Program. If you don't have access to a professional gait analysis, the "Wet Test" is a much simpler method that will give you a general idea of your foot shape and your degree of pronation.

Wet Foot Test Procedures:

1. Wet the bottom of your feet and step on any surface that will leave an imprint of your feet. A brown grocery bag or colored construction paper works well for this test.
2. Compare the imprint left by your feet to the three most common foot imprints found below.
3. The imprint will let you see how high or low your arches are as well as your degree of pronation.
4. This information combined with your shoe wear pattern (below) will allow you to better determine the best shoe for you.

Determine your Running Gait:

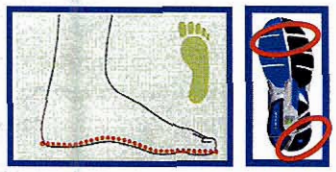
Neutral (Normal) Pronation: A neutral running gait involves a slight amount of pronation. The foot contacts the outside of the heel, rotates inward toward the mid-foot, then your weight is transferred to the ball of the foot. The least amount of injuries are associated with this running gait. These runners usually have a medium or normal arch height.

Overpronation: The foot is overly flexible and rotates excessively inward toward the mid-foot. This is the most common type of running gait seen. The amount of overpronation can range from slight to severe. These runners tend to have flat or low arches.

Underpronation: The foot is very rigid and lacks the normal amount of pronation. The foot does not rotate inward resulting in the runner's body weight staying toward the outside edge of the foot. Many injuries are associated with this running gait because of the poor shock absorbing biomechanics. This running gait is much less common. These runners tend to have high arches.

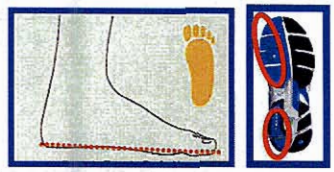
From the Army Physical Fitness Research Institute

Neutral Runners



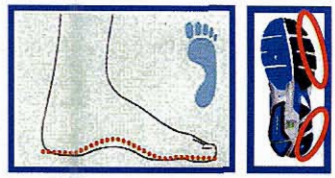
Normal Arch Height: A normal/medium arch is generally associated with normal pronation and a neutral running gait.
Wear Pattern: Wear on lateral heel and medial forefoot.
Shoe Shape: "Semi-Curved" The bottom of semi-curved shoes have a slight curve toward the midline. These shoes generally have a blend of flexibility, cushioning and stability.
Best Shoes: Stability Shoes - Provide a mixture of cushioning and medial support under the arch. These shoes usually have a semi-curved shape. Runners with a normal arch height and a slight amount of overpronation wear these shoes.

Overpronators



Flat/Low Arch Height: A flat/low arch is usually associated with overpronation.
Wear Pattern: Medial heel and forefoot.
Shoe Shape: "Straight" The bottom of straight shoes have little or no curvature which helps provide maximum stability.
Best Shoes: Motion-Control Shoes - Provide the maximum amount of stability to control excessive overpronation. These shoes usually have a straight shape. Runners who have a moderate to severe amount of overpronation wear these shoes.

Underpronators



High Arch Height: A high arch can be associated with a neutral gait or underpronation.
Wear Pattern: Lateral heel and forefoot.
Shoe Shape: "Curved" The bottom of curved shoes have a greater degree of curvature toward the midline which allows for maximum flexibility and encourages pronation.
Best Shoes: Cushioned Shoes - Provide the least amount of stability and encourage foot motion. These shoes usually have a curved shape. Individuals who have a neutral running gait and high arches wear these shoes. The name of this shoe type should be called a "neutral" shoe since all running shoes provide cushioning.

10 Tips on selecting the proper fitting running shoes

1. **Get the proper shoe length:** Allow for a thumb's width (about a 1/2 inch) between your longest toe and the front of the shoe. If you have ever had black toe nails or blisters on the front of your toes, it is most likely caused by running in shoes that are not long enough for your foot.
2. **Get the proper width:** You should be able to easily wiggle your toes in the toe box. If your toes are cramped together or you feel the shoes rubbing on either side, then you need a wider running shoe. If the upper part of the shoe is bulging over the sides of sole, then the shoe is too narrow.
3. **Get a snug fitting heel:** The back of the shoe (the heel cup) should conform to the shape of your heel and provide a snug fit and prevent your foot from slipping.
4. **Running shoes should feel comfortable immediately:** Running shoes do not require a "break-in" period. The shoes should feel comfortable the first time you put them on your feet. If the shoes feel tight or stiff, then you should avoid them and try on a different pair, size, brand or model.
5. **Look for flexible shoes:** Running shoes should flex easily in the toe box region. If they do not flex with ease, it can add extra stress and strain to your lower extremities. To test a shoe's flexibility, place the shoe length-wise between the palms of your hands and apply even pressure. Get a sense for how much force is needed for the shoe to bend. If it requires a great amount of force, avoid that pair of shoes.
6. **Test fit arch support/orthodics:** If you wear arch supports or orthodics in your running shoes, be sure to bring them along when you try on new running shoes. If the new shoes are constructed slightly different than your current pair, the arch support or orthodic may not fit correctly in the shoe. It's best to find this out in the store as opposed to when you get the new pair of shoes home.
7. **Shop for new running shoes in the late afternoon/early evening:** Feet tend to swell slightly at end of the day. A pair of running shoes will have a slightly tighter feel at night as opposed to in the morning.
8. **Wear the appropriate socks:** Try on new shoes with the socks that you normally run in. Dress socks and nylons are much thinner than running socks and will give the shoe a different fit and feel.
9. **Take a test run:** It's hard to get a true feel for running shoes without actually running in them. Most good sporting goods stores and specialty running shoe shops will allow and even encourage you to take a test run before purchasing the shoes.
10. **Seek further guidance:** If you feel you need more help selecting an appropriate pair of running shoes, ask a qualified professional for advice. Podiatrists, sports medicine physicians, physical therapists, athletic trainers and exercise physiologists may be able to provide you information to make the shoe buying process a little clearer. In particular, if you are an avid runner or if you are recovering from an injury, then consider consulting with APFRI regarding your shoe selection.

Plant Sterols May be one Approach to a Healthier Heart

by MAJ Heidi Kaufman, Registered Dietitian

When your mother told you to eat your vegetables, she was of course always right. Vegetables are good to eat for more than "one hundred and one" different reasons. Now there is yet another good reason to eat a diet rich in vegetables, fruit, whole grain, nuts, and legumes: these wholesome foods contribute trace amounts of a cholesterol-like substance called plant sterols and stanols. Some high fat foods such as sunflower seeds, almonds, avocados, corn oil, and olive oil deliver a higher amount of plant sterols compared to the "non-fat" food sources like vegetables. Combined, the fat and non-fat food sources of plant sterols and stanols, can have a significant impact on your heart health.

Although the mechanism for the stanol and sterol action is not completely understood, it appears as if their cholesterol-like molecular structure compete for binding sites in the intestinal wall and thereby interfere with either the absorption or transport of the regular cholesterol into the blood stream. The net effect is a reduction in "bad" low density lipoprotein cholesterol (LDL) while the "good" high density lipoprotein cholesterol (HDL) and "ugly" triglycerides stay the same. Plant sterols and stanols have also been linked to reduced levels of C-reactive protein, a marker for inflammation that may predict the risk of atherosclerosis (hardening of the artery walls). A 2003 meta-analysis reported a daily supplemental plant sterol intake of 2-2.5 grams was associated with about a 10% reduction in LDL cholesterol. Higher intake was not associated with greater benefits.

As pointed out earlier, there is more than one benefit for eating an abundance of fruit and vegetables: there appears to be synergistic effects for plant sterols and other nutrients. A 2006 double blind study funded by National Institute of Health and the Coca-Cola Co. which makes Minute Maid juice, used a 50-calorie "Light" Minute Maid orange juice fortified with 1 gram plant sterols per cup. Both groups drank two cups of juice per day which provided a total of 2 grams sterol per day for the intervention group. After eight weeks, the sterol supplemented group lowered their C-reactive protein levels by 12%, total cholesterol by 5%, and "bad" LDL cholesterol by 9.4% compared to baseline and the placebo group. Levels of the "good" HDL cholesterol improved 6% over baseline; both groups improved HDL levels, but the increase was higher in the sterol group.

As a "healthy eater," you can excel in your plant sterol and stanol consumption through a variety of whole foods, but the typical "western diet" consumed by the "average American" provides a mere 0.15-0.35 gram per day. The American Heart Association came out with revised guidelines for healthy eating in 2006 in which they recommend a 2 gram per day consumption of plant sterols as diet therapy to reduce "bad" LDL cholesterol.

A number of foods on the market today are fortified with plant sterols to help achieve a higher intake. For example, spreads like Take Control, Benecol, and Promise Active are all fortified with 1 gram plant sterols per serving (1 serving equals 1 tablespoon). Unfortunately, these spreads also deliver an average of 1/3 gram trans fatty acids per serving because they are partially hydrogenated fats, a very unfavorable type of fat for your heart health. In response to this paradox, Minute Maid, Promise Institute, and others are now marketing trans fatty acid free products fortified with plant sterols such as orange juice, yogurt drinks, and oat bars. If choosing to use any of these products for your daily supply of plant sterols, it is important to evaluate their caloric contribution, whether they fit in with your typical diet, and last but not least, if the taste

Consume Alcohol Only in Moderation: Moderate alcohol intake (wine and other alcoholic beverages) is associated with reduced cardiovascular events. However, alcohol consumption cannot be recommended to reduce cardiovascular disease (CVD) risk due to the serious adverse health and social consequences of a high alcohol intake. If alcoholic beverages are consumed, they should be consumed with meals and limited to no more than two drinks per day for men and one drink per day for women. A 12-oz bottle of beer, a 4-oz glass of wine, and a 1.5-oz shot of 80 proof spirits all contain the same amount of alcohol (0.5 oz) and are considered the equivalent of one drink. Alcohol has a higher calorie density than protein or carbohydrate and is considered a source of "empty calories." For example, the average 12 oz beer comes with about 146 calories while the light version is 99 calories for the same serving size. Table wine provides 82 calories per 4 oz serving and 80-proof spirit comes with 97 calories per shot. The phenolic fungicide and phytoestrogen "resveratrol" that is found in the skin and seeds of grapes may be partially responsible for the heart protective properties found from drinking dry red wine. Resveratrol has also been isolated in soy, peanuts, and teas made from the Itadori root. Since these foods are harmless in normal consumption levels, they may be acceptable substitutions for the non-wine drinker; however, more research is needed on the absorption and in vivo biomedical actions of free and conjugated resveratrol before general recommendations to the public can be made on these foods.

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